



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,780	12/02/2003	Yasuhisa Ehara	245697US3	1917
22850	7590	06/21/2005	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			CHEN, SOPHIA S	
			ART UNIT	PAPER NUMBER
			2852	

DATE MAILED: 06/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No. 10/724,780	Applicant(s) EHARA, YASUHISA	
	Examiner Sophia S. Chen	Art Unit 2852	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>12/2/03 3/2/04 4/30/04</u> | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections – 35 U.S.C. §103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4 and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Numazu et al. (EP 0 895 132 A2; cited in Form PTO-1449). in view of Taka et al. (US Pat. No. 6,360,070 B1)

Numazu et al. discloses an image forming apparatus, comprising: at least one first image carrier/means 9c configured to carry a chromatic color (yellow) toner image formed thereon (column 12, lines 11-15); a second image carrier 9d configured to carry a black toner image formed thereon (column 12, lines 16-20); at least one first gear (or first rotating means) A3 configured to rotate to drive the at least one first image carrier/means 9c to rotate (column 12, lines 52-56 and Figures 1 and 2); a second gear (or second rotating means) A4 configured to rotate to drive the second image carrier 9d

to rotate (column 12, lines 52-56 and Figures 1 and 2); a control device/means configured to control respective rotation stop-positions of the at least one first gear (or first rotating means) A3 and the second gear (or second rotating means) A4 (column 16, lines 12-44); a color image is formed in a color mode by transferring the chromatic color toner image formed on the at least one first image carrier/means 9c onto a transfer material P and by transferring the black toner image formed on the second image carrier/means 9d onto the transfer material P while superimposing each other on the transfer material P, and a black image is formed in a monochrome mode, by halting the at least one first gear (rotating means) A3 and the at least one first image carrier/means 9c and by transferring the black toner image formed on the second image carrier/means 9d onto the transfer material P (column 15, lines 5-14; column 21, lines 37-51); the control device controls the at least one first gear (first rotating means) A3 and the second gear (second rotating means) A4 to stop rotating at positions substantially equal to rotation start-positions of the at least one first gear (first rotating means) A3 and the second gear (second rotating means) A4, respectively, while maintaining a predetermined phase relation between the at least one first gear (first rotating means) A3 and the second gear (second rotating means) A4 in a registration (color) mode (column 16, lines 7-45; column 22, lines 8-21; column 24, line 57-15); the control device/means comprises at least one first reference portion provided on the at least one first gear (first rotating means) A3 (column 15, lines 26-31; Figure 1); a second reference portion provided on the second gear (second rotating means) A4 (column 15, lines 26-31; Figure 1); at least two sensors (detecting means) 61 and 62 configured to

detect the at least one first reference portion and the second reference portion (column 15, lines 31-44; Figure 1); a controller configured to control respective rotation stop-positions of the at least one first gear (first rotating means) A3 and the second gear (second rotating means) A4 based on detection signals generated by the at least two sensors 61 and 62 (column 16, lines 12-45); and at least one drive motor (or means) 36 configured to drive the at least one first gear (first rotating means) A3 and the second gear (second rotating means) A4 to rotate.

Numazu et al. differs from the instant claimed invention in not disclosing the control device controls the at least one first gear (or first rotating means) and the second gear (or second rotating means) to stop rotating at positions different from rotation start-positions of the at least one first gear (first rotating means) and the second gear (second rotating means), respectively, while maintaining a predetermined phase relation between the at least one first gear (or first rotating means) and the second gear (or second rotating means) in the color mode, the control device controls the second gear (second rotating means) to stop rotating at a position substantially equal to a rotation start-position of the second gear in the monochrome mode, and the at least one drive motor includes a stepping motor.

Taka et al. discloses an image forming apparatus comprising at least one first image carrier/means 222b to carry a chromatic color toner image formed thereon (column 15, lines 19-25); a second image carrier/means 222a configured to carry a black toner image formed thereon (column 15, lines 19-25); a control device/means controls the at least one first image carrier/means 222b and the second image

Art Unit: 2852

carrier/means 222a to stop rotating at positions different from rotation start-positions of the at least one first image carrier/means 222b and the second image carrier/means 222a, respectively, while maintaining a predetermined phase relation between the at least one first image carrier/means 222b and the second image carrier/means 222a in the color mode, the control device/means controls the second image carrier/means 222a to stop rotating at a position substantially equal to a rotation start-position of the second image carrier/means 222a in the monochrome mode (column 17, lines 30-55; column 22, lines 36-57; column 23, lines 24-32 and 62-66; column 26, lines 42-45; Figure 5), and the at least one drive motor M includes a stepping motor (column 22, lines 20-25).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the control device/means as taught by Taka et al. to the control device/means of Numazu et al. to avoid a local point (area) on the surface of each image carrier/means being damaged intensively (Taka et al.; column 22, lines 52-56).

Also, it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the stepping motor as taught by Taka et al. in place of the motor of Numazu et al. to be capable of performing precise position control (Taka et al.; column 22, lines 23-25).

4. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Numazu et al. in view of Taka et al.

Numazu et al. discloses a multi-color image forming method, comprising: rotating at least one first gear A3 to drive at least one first image carrier 9c to rotate in a color mode in which a color image is formed, and rotating a second gear A4 to drive a second image carrier 9d to rotate in the color mode and in a monochrome mode in which a black image is formed (column 12, lines 35-40, 55-61; Figures 1); forming a chromatic color toner image on the at least one first image carrier 9c in the color mode, and forming a black toner image on the second image carrier 9d in the color mode and the monochrome mode (column 12, lines 35-40, 55-61; Figures 1); transferring the chromatic color toner image formed on the at least one first image carrier 9c onto a transfer material P and transferring the black toner image formed on the second image carrier 9d onto the transfer material P while superimposing on the transfer material P in the color mode, and transferring the black toner image formed on the second image carrier 9d onto the transfer material P in the monochrome mode (column 15, lines 5-14; column 21, lines 37-51); and controlling the at least one first image carrier 9c and the second image carrier 9d to stop rotating at positions substantially equal to rotation start-positions of the at least one first image carrier 9c and the second image carrier 9d, respectively, while maintaining a predetermined phase relation between the at least one first image carrier 9c and the second image carrier 9d in a registration (color) mode in which color registration of color images is performed (column 16, lines 7-45; column 22, lines 8-21; column 24, line 57-15).

Numazu et al. differs from the instant claimed invention in not disclosing the following steps: controlling the at least one first gear and the second gear to stop

rotating at position different from rotation start-positions of the at least one first gear and the second gear, respectively, while maintaining a predetermined phase relation between the at least one first gear and the second gear in the color mode; controlling the second gear to stop rotating at a position substantially equal to a rotation start-position of the second gear in the monochrome mode; and causing the at least one first gear and the second to equally shift by a predetermined rotation angle after a predetermined number of black image forming operations are continuously performed in the monochrome mode.

Taka et al. discloses an image forming method comprising: controlling the at least one first image carrier 222b and the second image carrier 222a to stop rotating at position different from rotation start-positions of the at least one first image carrier 222b and the second image carrier 222a, respectively, while maintaining a predetermined phase relation between the at least one first image 222b and the second image carrier 222a in the color mode; controlling the second image carrier 222a to stop rotating at a position substantially equal to a rotation start-position of the second image carrier 222a in the monochrome mode (column 17, lines 30-55; column 22, lines 36-57; column 23, lines 24-32 and 62-66; column 26, lines 42-45; Figure 5); and causing the at least one first image carrier 222b and the second image carrier 222a to equally shift by a predetermined rotation angle after a predetermined number of black image forming operations are continuously performed in the monochrome mode (column 22, lines 53-56; column 24, lines 4-13; column 27, lines 35-40).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the control steps as taught by Taka et al. to the control steps of Numazu et al. to avoid a local point (area) on the surface of each image carrier/means being damaged intensively (Taka et al.; column 22, lines 52-56).

Other Prior Art

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Numazu et al. (US Pat. No. 5,970,286) discloses an image forming apparatus and method comprising at least one first image carrier; a second image carrier; at least one first gear; a second gear; a control device; images being formed in a color mode or a monochrome mode; and a motor.

Ehara et al. (US Pat. Pub. No. US 2003/0152402 A1) discloses an image forming apparatus and method comprising at least one first image carrier; a second image carrier; at least one first gear; a second gear; a control device; images being formed in a color mode or a monochrome mode; a first motor; and a second motor.

Koide (US Pat. Pub. No. US 2003/0021613 A1) discloses an image forming apparatus and method comprising at least one first image carrier; a second image carrier; a control device; and images being formed in a color mode or a monochrome mode.

Komiyama et al. (JP 07-181773 A) discloses an image forming apparatus and method comprising at least one first image carrier; a second image carrier; at least one

Art Unit: 2852

first gear; a second gear; a control device; images being formed in a color mode or a monochrome mode; and a motor.

Maruyama (JP 11-084799 A) discloses an image forming apparatus and method comprising at least one first image carrier; a second image carrier; at least one first gear; a second gear; a control device; images being formed in a color mode or a monochrome mode; and a motor.

Sato (JP 2000-293003 A) discloses an image forming apparatus and method comprising at least one first image carrier; a second image carrier; a control device; and images being formed in a color mode or a monochrome mode.


Kobayashi (JP 2002-062706 A) discloses an image forming apparatus and method comprising at least one first image carrier; a second image carrier; at least one first gear; a second gear; a control device; images being formed in a color mode or a monochrome mode; a first motor; and a second motor.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sophia S. Chen whose telephone number is (571) 272-2133. The examiner can normally be reached on M-F (7:00-3:00) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Arthur Grimley can be reached on (571) 272-2136. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sophia S. Chen
Primary Examiner
Art Unit 2852

Ssc
June 20, 2005